

Labour at risk*

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In a recent working paper, we propose a Bayesian VAR model with stochastic volatility and time varying skewness to estimate the degree of labour at risk in the euro area and in the US. We take advantage of the multivariate nature of our parametric model to measure stagflation risk defined as the possible joint event of large increases in the unemployment rate and large annual rates of inflation. We find an increasing risk of stagflation for the euro area in 2022 while in the United States stagflation risk increased earlier in 2021 and started decreasing more recently. Notwithstanding the significantly high levels of inflation, stagflation risks have been contained by the resilient performance of the labour market in both areas. We argue that the degree of labour at risk is therefore important for the assessment of the inflation-unemployment trade-off.

The asymmetry of cyclical developments is historically salient in the labour market, (see McKay et al. (2008), Ferraro et al. (2022), among many). The number of persons losing their jobs and becoming unemployed rises abruptly during recessions. Conversely, unemployed workers take their time to slowly get back into employment, with the unemployment rate decreasing (or employment increasing) at a slower pace during economic expansions. More generally, the cyclical asymmetry in the labour market can be related to the assessment of tail risks, as these account for the possible worst-case scenarios that could occur in case of economic downturns. Hence, the assessment of tail risks merits the attention of policymakers, who attempt via their policy actions to mitigate some of the welfare losses arising in case a recession occurs, and the tail risks are realised.¹

*This Policy Brief is based on [ECB Working Papers No 2840](#). The views expressed are those of the authors and do not necessarily reflect those of the European Central Bank (ECB).

¹The topic of tail risks is widely explored in the literature, especially regarding GDP growth (starting from the seminal paper of Adrian et al. (2019)).

Empirical evidence shows that the likelihood of large increases in the unemployment rate has been historically higher than the likelihood of large decreases both in the euro area and in the United States. There are several channels that could be behind the cyclical asymmetry of the labour market. On the one hand, even when the business cycles are symmetric, the economy can be faced with sudden and large increases in unemployment during recessions. This could indicate that the Okun's law breaks down during recessions. On the other hand, external frictions can simultaneously make both the real output and the labour market to be asymmetric. For example, downward nominal wage rigidities inhibit the necessary real wage cuts needed during recessions, thus leading to stronger declines in vacancy posting and employment during downturns. Also, financial frictions could also induce skewed business cycles, by magnifying the impact of a downturn while leading to a more gradual recovery. In simple terms, the labour market is more likely to be faced with strong adverse shocks that increase the unemployment rate substantially when the economy is in a bad state of the world. This bad state of the world can vary between a very sharp slowdown of the economy or a prolonged recession for real activity, or instead a strong tightening of financial conditions. This implies that during bad states of the world large increases in the unemployment rate become more likely than in good times.

In this note (based on our study (Botelho et al. (2023))), we develop a BVAR model that caters for the fact that the unemployment rate changes are asymmetric over the business cycles, declining slowly and on average during economic expansions and rising suddenly and violently during downturns. Specifically, we allow both the size and the symmetry of the shocks in the BVAR to change over time as a function of the state of the economy. We use the model to answer two important questions relevant for policymakers: how many persons are at risk of becoming unemployed in case the economy is suddenly hit by a series of large adverse shocks? And how likely is this to happen over the next year?

1. Labour-at-risk

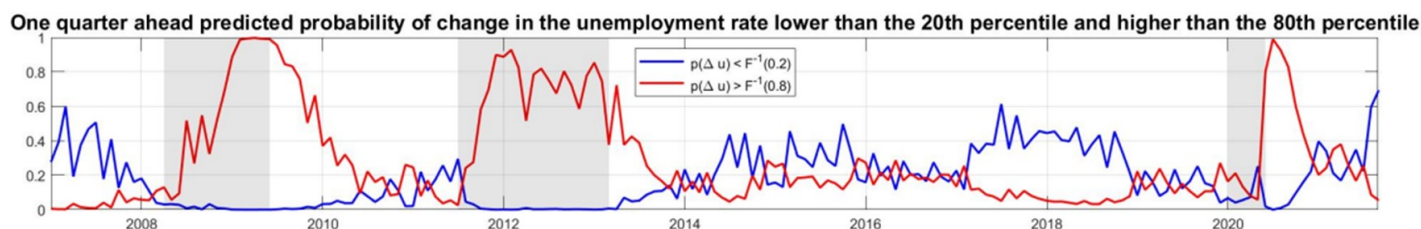
We define as measure of "labour-at-risk" which pins down the probability of large increases in the unemployment rate over time. Our labour-at-risk measure targets well, on average, the realised changes in the unemployment rate during recessions in both the euro area and the US. These are periods characterised by sudden increases in the unemployment rate, implying that our labour-at-risk measure provides information on the number of jobs that are at risk in case the economy is hit by recessionary shocks. This is especially the case during the Global financial crisis and the European Sovereign Debt crisis.

By contrast, our labour at risk indicator was less successful to predict the sudden increase in the US unemployment rate during the onset of the pandemic. The pandemic-related lockdowns and the temporary layoffs following the pandemic provided a unique set of shocks that our labour at risk measure was not able to fully cater for. Instead, the increases in the unemployment rate during the COVID pandemic were considerably closer to our labour-at-risk estimate for the euro area, as both the weakening of real activity and the increase in financial tightening provided to be good predictors of the increase in the unemployment rate over this period. Key to the success of our indicator was the widespread use of job retention schemes, which mitigated increases in the unemployment rate by limiting the number of temporary layoffs and keeping employer-employee relationships stable in the euro area.

Relatedly, we use our model to estimate the probability of "large" increases (and decreases) in the unemployment rate, given the other variables in the model (see Figure 1 and 2). For the euro area, the periods with a higher predicted probability of a quarterly large increase in the unemployment rate coincide with the three recessions observed during our sample, in which real activity plunged and financial conditions tightened substantially. Conversely, the probability of a large downward swing in the unemployment rate is higher during expansionary periods and practically null during recessions. Similar results are obtained for the United States, although the

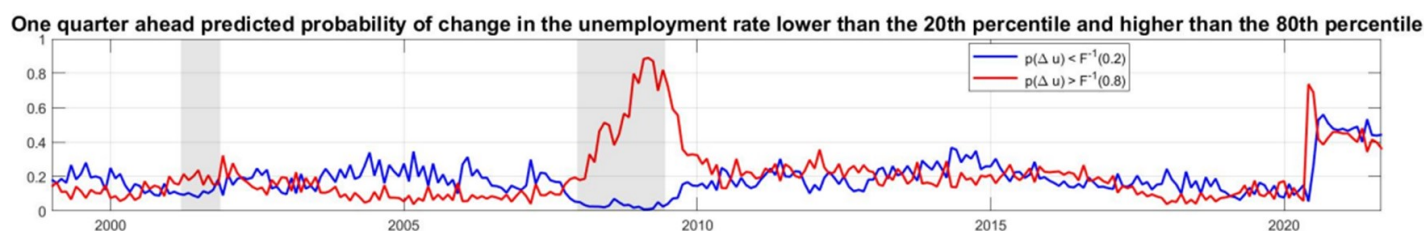
probabilities of large swings in the unemployment rate are relatively more symmetric (albeit relatively low) in either direction during expansionary periods than for the euro area. The probabilities of large changes increased during the post-pandemic period in the US, as a result of the strong increase in the volatility of the changes in the unemployment rate stemming from the large reallocation flows that followed the temporary layoffs and the Great Resignation, and the re-entry of these workers back into the US labour market.

Figure 1: Predicted probability of large changes in the unemployment rate for the euro area



Notes: The figure shows the estimated one quarter ahead probability of changes in the month-on-month change unemployment rate lower than the unconditional 20th percentile (in blue) and larger than the unconditional 80th percentile (in red) in the euro area.

Figure 2: Predicted probability of large changes in the unemployment rate for the US



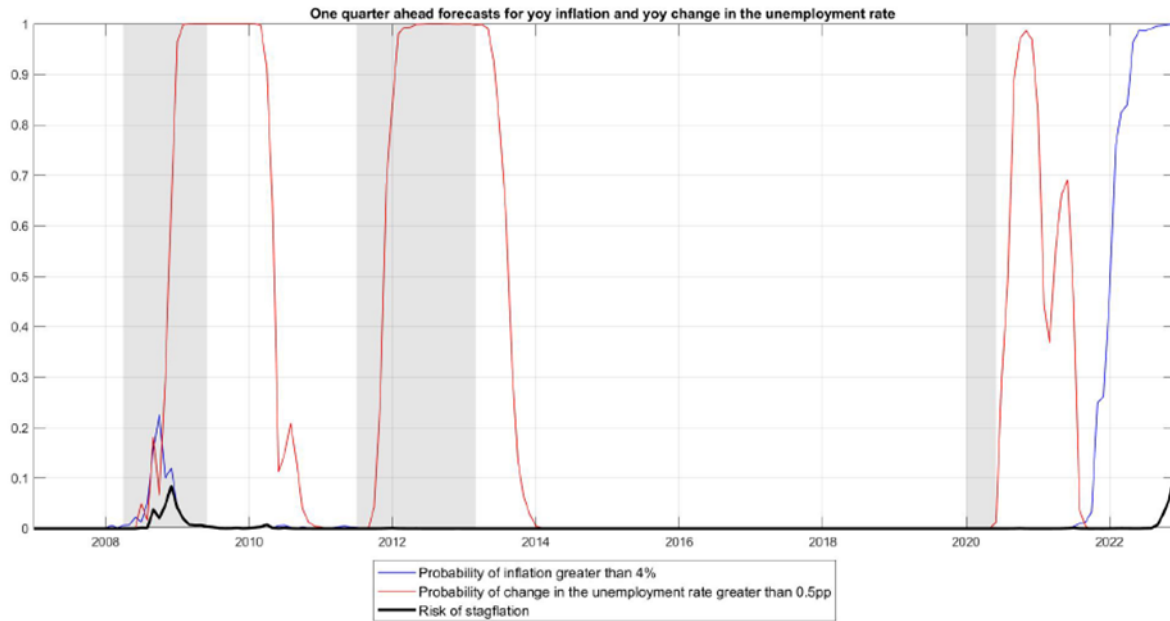
Notes: The figure shows the estimated one quarter ahead probability of changes in the month-on-month change unemployment rate lower than the unconditional 20th percentile (in blue) and larger than the unconditional 80th percentile (in red) in the US.

2. Stagflation risk

The recent sudden increase in inflation rates in both the euro area and the United States gave rise to a discussion on whether these economies would enter into a stagflation period. Stagflation is loosely defined as periods of low or negative output growth, an increasing or persistently high level of unemployment, and an inflation rate that is high by historical standards. We exploit the multivariate nature of our model to study stagflation risk. We analyze how stagflation risk has changed over time both in the euro area and in the US, by disentangling the risk deriving from an increasing probability of large upswings in the unemployment rate and the risk deriving from an increasing probability of large inflation rates.²

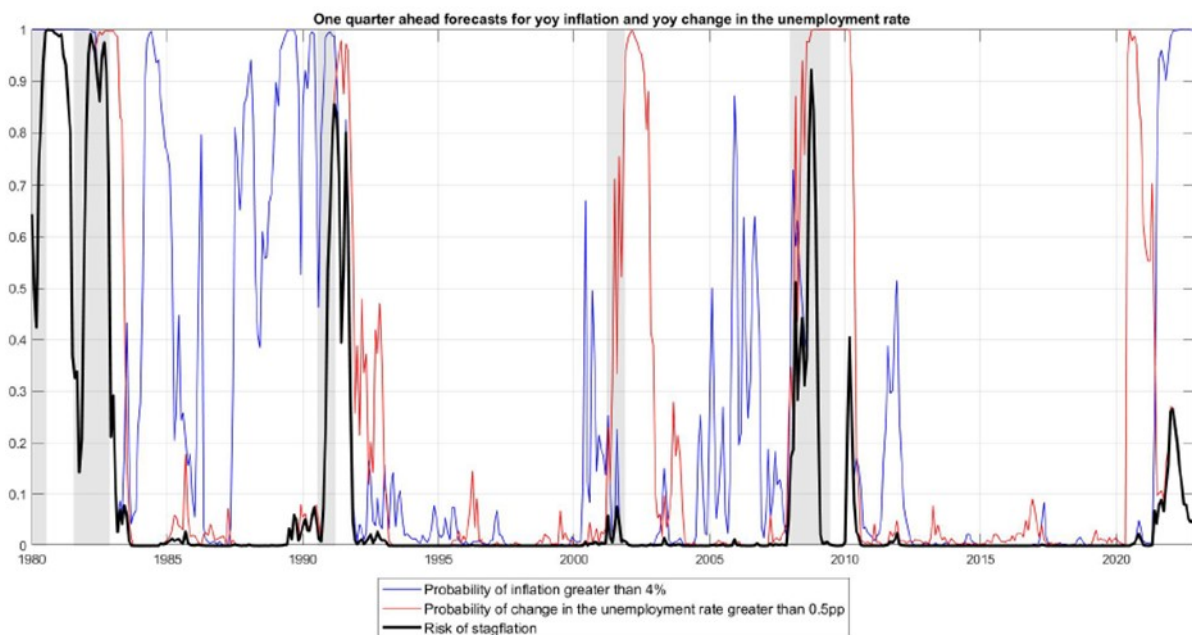
Our results suggest that there has only been a limited risk of stagflation in the euro area since 2007 (see Figure 3). The probability of stagflation reached around 10% in December 2008 during the Global Financial crisis, first with a relatively mild increase in inflation risk and later with a strong increase in the amount of labour at risk. During the Sovereign Debt crisis there was a high degree of labour at risk but no inflation risk. The risk of stagflation decreased and remained virtually null until the second half of 2022, despite an increase in the degree of labour at risk following the onset of the pandemic. More recently, in September 2022, the increase in inflation risk and a gradually increasing degree of labour at risk in the economy have increased the stagflation risk faced by the euro area to its highest degree since 2007, above 10%.

² In particular, consider as stagflation periods those with yearly changes in the unemployment rate exceeding the 0.5 percentage points and inflation surpassing 4%.

Figure 3: One quarter ahead probability of stagflation in euro area

Notes: The figure shows the estimated one quarter ahead probability of the change in the year-on-year unemployment rate being greater than 0.5pp (in red), the year-on-year inflation rate being greater than 4% (in blue) and the probability of both events occurring (in black) in the euro area. The shadow bands are for the EACN recessions periods.

In the US, in the early 80s during the recession following the Oil Crisis both high predicted probabilities of large increases in the unemployment rate and in the inflation rate contributed to high stagflation risk. Instead, after July 1984 until 1990, stagflation risk has been muted in the US. As the recession started in July 1990, stagflation probabilities increased and reached almost 85 % in March 1990. Afterwards, stagflation risk remained muted for almost 19 years, with large, predicted increases in the unemployment rate during the dot-com bubble not followed by expected large inflation rates. Stagflation risk re-emerged at the burst of the financial crisis. In 2021, with the increase in energy prices, the probability of stagflation risk increased in the US, but remained contained and decreased in 2022 due to the strong performance of the US labour market, which points in our model to a lower risk of unemployment with the inflation risk remaining instead elevated (see Figure 4).

Figure 4: One quarter ahead probability of stagflation in the US

Notes: The figure shows the estimated one quarter ahead probability of the change in the year-on-year unemployment rate being greater than 0.5pp (in red), the year-on-year inflation rate being greater than 4% (in blue) and the probability of both events occurring (in black) in the US. The shadow bands are for the NBER recessions periods.

A comparison between the estimated stagflation risk for October 2008, and December 2022 unveils that the current economic juncture is considerably more uncertain than what was observed in 2008, both in the United States and in the euro area.

Overall, we find that labour at risk and inflation at risk usually occur at different points in time, with a higher degree of labour at risk tending to follow a higher inflation at risk. The timing of these risks could thus provide important information for the assessment of the inflation-unemployment trade-off and on the role for, and action of, monetary policy.

3. Conclusion

Our model aims at providing policymakers with timely information about possible risks affecting the labour market and showing how much can the unemployment rate increase at any given moment in time if the economy is hit by a persistent series of negative shocks. Movements in the average response of the unemployment rate and in the asymmetry of labour market shocks depend both on the developments in real activity or on the tightening of financial conditions. Further, our model can be used to track the risk of stagflation in both the euro area and in the United States. The analysis of joint risks could prove important for the assessment of the unemployment-inflation trade-off and of the scope of monetary policy. Finally, our model also provides the foundation for embedding asymmetric shocks as part of the toolkit used for the estimation of medium-scale DSGE models. ■

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